CLAIMS

We claim:

1. A method for removing organic contaminants from a substrate comprising the steps:

holding said substrate in tank; and

filling said tank with a gas mixture comprising water, ozone and an additive acting as a scavenger.

2. A method as recited in claim 1, further comprising the step of adding to said mixture a gas selected from the group consisting of oxygen, nitrogen and argon.

3. A method as recited in claim 1, wherein at least one of the organic contaminants is a confined layer covering at least part of said substrate.

4. A method as recited in claim 3, wherein said confined layer has a thickness in the range of submonolayer coverage and 1μm.

5. A method according to claim 1, wherein said gas mixture is in contact with said substrate.

6. A method as recited in claim 1, wherein said additive is acting as OH radical scavenger.

7. A method as recited in claim 1, wherein said additive is selected from the group consisting of a carboxylic acid, a phosphonic acid and the salts thereof.

8. A method as recited in claim 7, wherein said additive is acetic acid.

9. A method according to claim 1, wherein the proportion of said additive in said gas mixture is less than 10% molar weight of said gas mixture.

10. A method according to claim 9, wherein the

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proportion of said additive in said gas mixture is less than 1% molar weight of said mixture.

11. A method according to claim 10, wherein the proportion of said additive in said gas mixture is less than 0.5% molar weight of said gas mixture.

12. A method according to claim 11, wherein the proportion of said additive in said gas mixture is less than 0.1% molar weight of said gas mixture.

13. A method according to claim 1, further comprising the step of rinsing said substrate with a solution.

14. A method as recited in claim 13, wherein the solution comprises de-ionised water.

15. A method as recited in claim 14, wherein said solution further comprises at least one solution selected from the group consisting of HCl, HF, HNO_3, CO_2 and O_3.

16. A method as recited in claim 14, wherein said solution is subjected to megasone agitation.

17. A method as recited in claim 1, further comprising the steps of:

filling said tank with a solution comprising water and said additive, the solution level in said tank remaining below said substrate; and

heating said solution.

18. A method as recited in claim 17, further comprising the step of filling said tank with ozone.

19. A method as recited in claim 18, wherein the ozone is bubbled through the solution.

20. A method as recited in claim 17, wherein the

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temperature of said solution is between 16°C and 99°C.

21. A method as recited in claim 20, wherein the temperature of said solution is between 20°C and 90°C.

22. A method as recited in claim 21, wherein the temperature of said solution is between 60°C and 80°C.

23. A method as recited in claim 1, wherein the water is a saturated water vapor.

24. A method as recited in claim 1, wherein the ozone concentration in the mixture is less than 10% molar weight of said mixture.

25. A method as recited in claim 1, wherein the temperature of said mixture is below 150°C but higher than the temperature of said substrate.

26. A method as recited in claim 1, wherein said substrate is a silicon wafer.

27. A method for removing organic contaminants from a substrate comprising the steps of:

holding said substrate in a tank; and

filling said tank with a fluid comprising water, ozone and an additive acting as a scavenger, and wherein the proportion of said additive in said fluid is less than 1% molar weight of said fluid.

28. The method as recited in claim 27 wherein said temperature of said fluid is below 150°C but higher than the temperature of said substrate.

29. A method for removing contaminants from a silicon substrate comprising the steps:

holding said substrate in a tank;

filling said tank with a fluid mixture

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comprising water and ozone to thereby achieve an oxide growth on said substrate;

removing the oxide; and

drying the silicon wafer.

30. The method as recited in claim 29 wherein said fluid mixture comprises at least one fluid selected from the group consisting of a gas, a liquid, steam, a vapor and a mixture thereof.

31. The method as recited in claim 29 further comprising the step of growing a thin passivating oxide layer on said silicon wafer prior to the step of drying said wafer.

32. The method as recited in claim 31 wherein said step of growing said thin passivating oxide layer is executed in a mixture of dilute HCl and ozone.

33. The method as recited in claim 29 wherein the step of removing the oxide is executed in a solution of dilute HF with or without additives such as HCl.

34. The method as recited in claim 29 wherein said fluid mixture is further comprising an additive acting as a scavenger.

35. The method as recited in claim 29 wherein the fluid further comprises at least one acid selected from the group consisting of acetic acid and nitric acid.

36. A method for removing contaminants from a silicon substrate comprising the steps:

holding said substrate in tank;

filling said tank with a gaseous mixture comprising water and ozone to thereby achieve an oxide growth on said substrate;

removing the oxide; and

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drying the silicon wafer.

37. The method as recited in claim 34 further comprising the step of growing a thin passivating oxide layer on said silicon wafer prior to the step of drying said wafer.

38. The method as recited in claim 35 wherein said step of growing said thin passivating oxide layer is executed in a mixture of dilute HCl and ozone.

39. The method as recited in claim 34 wherein the step of removing the oxide is executed in a solution of dilute HF with or without additives such as HCl.

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